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DIVISION 09 - FINISHES

SECTION 09900

PAINTING, GENERAL

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SECTION 09900

PAINTING, GENERAL

1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 2697	(1986; R 1991) Volume Nonvolatile Matter in Clear or Pigmented Coatings

FEDERAL SPECIFICATIONS (FS)

FS TT-E-489	(Rev J) Enamel, Alkyd, Gloss, Low VOC Content
FS TT-P-636	(Rev D) Primer Coating, Alkyd, Wood and Ferrous Metal
FS TT-P-664	(Rev D) Primer Coating, Alkyd, Corrosion-Inhibiting, Lead and Chromate Free, Noc-Complaint

STEEL STRUCTURES PAINTING COUNCIL (SSPC)

SSPC PA 1	(1991) Shop, Field, and Maintenance Painting
SSPC SP 1	(1982) Solvent Cleaning
SSPC SP 2	(1995) Hand Tool Cleaning
SSPC SP 3	(1995) Power Tool Cleaning
SSPC SP 5	(1991) White Metal Blast Cleaning
SSPC SP 6	(1994) Commercial Blast Cleaning
SSPC SP 7	(1994) Brush-Off Blast Cleaning
SSPC SP 8	(1991) Pickling
SSPC SP 10	(1991) Near-White Blast Cleaning

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01300 SUBMITTAL PROCEDURES:

SD-01 Data

Paint; FIO.

Submit manufacturer's data sheets showing the following information:

a. Percent solids by volume

b. Minimum and maximum recommended dry-film thickness per coat for prime, intermediate, and finish coats.

c. Recommended surface preparation.

d. Recommended thinners.

e. Statement verifying that the specified prime coat is recommended by the manufacturer for use with the specified intermediate and finish coats.

f. Application instructions including recommended equipment and temperature limitations.

g. Curing requirements and instructions.

SD-14 Samples

Paint; GA.

Submit color swatches.

2 PRODUCTS

2.1 PAINT

The term "paint" as used herein includes emulsions, enamels, paints, stains, varnishes, sealers, cement-emulsion filler, and other coatings, whether used as prime, intermediate, or finish coat. Paint shall conform to the respective specifications listed for use in the painting schedules at the end of this section, except when the required amount of a material of a particular batch is 50 gallons or less, an approved first-line proprietary paint material with similar intended formulation, usage and color to that specified may be used. Additional requirements are as follows:

2.1.1 Painting and Coating System

The following paint coatings system index lists the various painting and coating systems by service and generic type.

2.1.1.1 Submerged or Buried Coating System

2.1.1.1.1 System No. 7

Submerged or Buried Metal - (High Solids Epoxy).

2.1.1.2 Exposed Metal Coating System

2.1.1.2.1 System No. 15

Exposed Metal, Atmospheric Weathering Environment - (Alkyd).

2.1.1.3 Buried Metal Coating System

2.1.1.3.1 System No. 21

Buried Metal - (Coal-Tar Epoxy).

2.1.2 Systems

These systems are specified in detail in the following paragraphs. For each coating, the required surface preparation, prime coat, intermediate coat (if required), topcoat, and coating thicknesses are described. Mil thicknesses shown are minimum dry-film thicknesses. All products shall meet local VOC requirements.

2.1.3 Submerged or Buried Coating System

2.1.3.1 System No. 7

Submerged or Buried Metal.

2.1.3.1.1 Type

High (82 percent minimum) solids epoxy. Must have FDA approval.

2.1.3.1.2 Service Conditions

For use with valves or piping in potable water service, buried valves or piping.

2.1.3.1.3 Surface Preparation

SSPC SP 10.

2.1.3.1.4 Coating System

Apply two coats to a minimum dry-film thickness of 14 mils total. Color: white.

2.1.4 Exposed Metal Coating System

2.1.4.1 System No. 15

Exposed Metal, Atmospheric Weathering Environment.

2.1.4.1.1 Type

Gloss alkyd enamel having a minimum volume solids content of 46 percent with alkyd primer. Primer shall conform to FS TT-P-664 or FS TT-P-636; finish coat per FS TT-E-489, Type 1, Class A.

2.1.4.1.2 Service Conditions

For use on exterior metal and piping subject to sunlight and weathering.

2.1.4.1.3 Surface Preparation

SSPC SP 6.

2.1.4.1.4 Prime Coat

Apply to minimum dry-film thickness of two mils.

2.1.4.1.5 Finish Coat

One or two coats to a minimum dry-film thickness of 3.0 mils.

2.1.5 Buried Metal Coating System

2.1.5.1 System No. 21

Buried Metal.

2.1.5.1.1 Type

Coal-tar epoxy having a minimum volume solids of 68 percent (ASTM D 2697).

2.1.5.1.2 Service Conditions

Buried metal, such as valves, flanges, bolts, nuts and fittings.

2.1.5.1.3 Surface Preparation

SSPC SP 6.

2.1.5.1.4 Prime Coat

16 mils thick.

2.1.5.1.5 Topcoat

16 mils thick.

2.1.6 Abrasives for Surface Preparation

2.1.6.1 Abrasives used for preparation of iron and steel surfaces shall be one of the following:

a. 16 to 30 or 16 to 40 mesh silica sand or mineral grit.
b. 20 to 40 mesh garnet.
c. Crushed iron slag, 100 percent retained on No. 80 mesh.
d. SAE Grade G-40 or G-50 iron grit.

2.1.6.2 In above gradations, 100 percent of the material shall pass through the first stated sieve size and 100 percent shall be retained on the second stated sieve size.

3 EXECUTION

3.1 SURFACE PREPARATION

3.1.1 General

Do not sandblast or prepare more surface area in one day than can be coated in one day; prepare surfaces and apply coatings the same day. Remove all sharp edges, burrs, and weld spatter. Do not sandblast epoxy- or enamel-coated pipe that has already been factory coated, except to repair scratch or damaged coatings.

3.1.2 Surface preparation shall conform with the SSPC Specifications as follows:

Solvent Cleaning	SSPC SP 1
Hand Tool Cleaning	SSPC SP 2
Power Tool Cleaning	SSPC SP 3
White Metal Blast Cleaning	SSPC SP 5
Commercial Blast Cleaning	SSPC SP 6
Brush-Off Blast Cleaning	SSPC SP 7
Pickling	SSPC SP 8
Near-White Blast Cleaning	SSPC SP 10

3.1.3 Wherever the words "solvent cleaning", "hand tool cleaning", "wire brushing", or "blast cleaning" or similar words are used in these specifications or in paint manufacturer's specifications, they shall be understood to refer to the applicable SSPC (Steel Structure Painting Council) specifications listed above.

3.1.4 Remove oil and grease from metal surfaces in accordance with SSPC SP 1. Use clean cloths and cleaning solvents and wipe dry with clean cloths. Do not leave a film or greasy residue on the cleaned surfaces before sandblasting.

3.1.5 Remove weld spatter and weld slag from metal surfaces and grind smoothly rough welds, beads, peaked corners, and sharp edges including erection lugs in accordance with SSPC SP 2 and SSPC SP 3.

3.1.6 Neutralize welds with a chemical solvent that is compatible with the specified coating materials. Use clean cloths and chemical solvent. Wipe dry with clean cloths. Do not leave a residue on the cleaned surfaces.

3.2 FIELD TOUCH-UP OF SHOP-APPLIED PRIME COATS

3.2.1 Remove oil and grease surface contaminants on metal surfaces in accordance with SSPC SP 1. Use clean rags wetted with a degreasing solution, rinse with clean water, and wipe dry.

3.2.2 Remove dust, dirt, salts, moisture, chalking primers, or other surface contaminants that will affect the adhesion or durability of the coating system. Use a high-pressure water blaster or scrub surfaces with a broom or brush wetted with a solution of trisolium phosphate, detergent, and water. Rinse scrubbed surfaces with clean water.

3.2.3 Remove loose or peeling primer and other surface contaminants not easily removed by the previous cleaning methods in accordance with SSPC SP 7. Take care that remaining primers are not damaged by the blast cleaning

operation. Remaining primers shall be firmly bonded to the steel surfaces with blast cleaning edges feathered.

3.2.4 Remove rust, scaling, or primer damaged by welding or during shipment, storage, and erection in accordance with SSPC SP 10. Take care that remaining primers are not damaged by the blast cleaning operation. Remaining primers shall be firmly bonded to the steel surfaces with blast cleaned edges feathered.

3.2.5 Use repair procedures on damaged primer which protects adjacent primer. Blast cleaning may require the use of lower air pressure, smaller nozzles, and abrasive particle sizes, short blast nozzle distance from surface, shielding, and/or masking.

3.2.6 After abrasive blast cleaning of damaged and deflective areas, remove dust, blast particles, and other debris by dusting, sweeping, and vacuuming; then apply the specified touch-up coating.

3.2.7 Surfaces that are shop primed shall receive a field touch-up of the same primer used in the original prime coat.

3.3 PAINTING SYSTEMS

3.3.1 All materials of a specified painting system, including primer, intermediate, and finish coats, shall be produced by the same manufacturer. Thinners, cleaners, driers, and other additives shall be as recommended by the paint manufacturer for the particular coating system.

3.3.2 Deliver paints to the jobsite in the original, unopened containers.

3.4 PAINT MIXING

Prepare multiple-component coatings using all of the contents of the container for each component as packaged by the paint manufacturer. Do not use partial batches. Do not use multiple-component coatings that have been mixed beyond their pot life. Provide small quantity kits for touch-up painting and for painting other small areas. Mix only the components specified and furnished by the paint manufacturer. Do not intermix additional components for reasons of color or otherwise, even within the same generic type of coating.

3.5 PROCEDURES FOR THE APPLICATION OF COATINGS

3.5.1 Conform to the requirements of SSPC PA 1. Follow the recommendations of the coating manufacturer including the selection of spray equipment, brushes, rollers, cleaners, thinners, mixing, drying time, temperature and humidity of application, and safety precautions.

3.5.2 Stir, strain, and keep coating materials at a uniform consistency during application. Apply each coating evenly, free of brush marks, sags, runs, and other evidence of poor workmanship. Use a different shade or tint on succeeding coating applications to indicate coverage where possible. Finished surfaces shall be free from defects or blemishes.

3.5.3 Do not use thinners unless recommended by the coating manufacturer. If thinning is allowed, do not exceed the maximum allowable amount of thinner per gallon of coating material. Stir coating materials at all times

when adding thinner. Do not flood the coating material surface with thinner prior to mixing. Do not reduce coating materials more than is absolutely necessary to obtain the proper application characteristics and to obtain the specified dry-film thicknesses.

3.5.4 Remove dust, blast particles, and other debris from blast cleaned surfaces by dusting, sweeping, and vacuuming. Allow ventilator fans to clean airborne dust to provide good visibility of working area prior to coating applications. Remove dust from coated surfaces by dusting, sweeping, and vacuuming prior to applying succeeding coats.

3.5.5 Apply coating systems to the specified minimum dry-film thicknesses as measured from above the peaks of the surface profile.

3.5.6 Apply primer immediately after blasting cleaning and before any surface rusting occurs, or any dust, dirt, or any foreign matter has accumulated. Reclean surfaces by blast cleaning that have surface colored or become moist prior to coating application.

3.5.7 Apply a brush coat of primer on welds, sharp edges, nuts, bolts, and irregular surfaces prior to the application of the primer and finish coat. The brush coat shall be done prior to and in conjunction with the spray coat application. Apply the spray coat over the brush coat.

3.6 SURFACES TO BE COATED

Coat surfaces as described below.

3.6.1 Coat aboveground and exposed piping or piping in vaults and structures as described in the various piping specifications. Color shall be selected by the Contracting Officer.

3.6.2 Coat valves as described in the various valve specifications. Aboveground valves, or valves in vaults and structures, shall match the color of the connecting piping.

3.7 DRY-FILM THICKNESS TESTING

3.7.1 Measure coating thickness specified for metal surfaces with a magnetic-type dry-film thickness gage. Test the finish coat for holidays and discontinuities with an electrical holiday detector, low-voltage, wet-sponge type. Provide measuring equipment. Provide detector and dry-film thickness gage. Check each coat for the correct dry-film thickness. Do not measure within eight hours after application of the coating.

3.7.2 Make five separate spot measurements (average of three readings) spaced evenly over each 100 square feet of area (or fraction thereof) to be measured. Make three gage readings for each spot measurement of either the substrate or the paint. Move the probe a distance of 1 to 3 inches for each new gage reading. Discard any unusually high or low gage reading that cannot be repeated consistently. Take the average (mean) of the three gage readings as the spot measurement. The average of five spot measurements for each such 100 square foot area shall not be less than the specified thickness. No single spot measurement in any 100 square foot area shall be less than 80 percent, nor more than 120 percent, of the specified thickness. One of three readings which are averaged to produce each spot measurement may underrun by a greater amount.

3.8 REPAIR OF IMPROPERLY COATED SURFACES

If the item has an improper finish color or insufficient film thickness, clean and topcoat the surface with the specified paint material to obtain the specified color and coverage. Sandblast or power-sand visible areas of chipped, peeled, or abraded paint, feathering the edges. Then prime and finish coat in accordance with the specifications. Work shall be free of runs, bridges, shiners, laps, or other imperfections.

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DIVISION 09 - FINISHES

SECTION 09910

STATION MARKING

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SECTION 09910

STATION MARKING

1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

FEDERAL SPECIFICATIONS (FS)

FS TT-P-115	(Rev F) Paint, Traffic, (Highway, White and Yellow)

2 PRODUCTS

2.1 MATERIALS

2.1.1 Paint

Exterior paint on concrete shall conform to FS TT-P-115, except the color shall be non-fading black.

3 EXECUTION

3.1 INSTALLATION

3.1.1 General

The intersection of the channel center line and levee control line with the center line of new, relocated, and existing facilities such as bridges and street intersections, pole lines, underground utility crossings, side drains, upstream and downstream limits of permanent work, and other required information shall be marked by painting station numbers and additional identifying data as listed in the tabulation of location of text of markings. All markings shall be painted on concrete walls (channel walls, headwalls, abutments, etc.)

3.2 PAINTING

3.2.1 Preparation of Surfaces

Concrete surfaces shall be thoroughly cleaned of all curing compounds, efflorescence, dirt, oil or other deleterious material by approved methods. The surface preparation shall be accomplished in such manner that paint will satisfactorily adhere to the surface.

3.2.2 Application

Painting shall be done in a neat and workmanlike manner and may be applied by brush, spray, roller or any combination of these methods. Painting of numbers and letters shall be accomplished with stencils and brush or spray

application. Color for letters and numbers shall be black. All markings on concrete shall be in uniform capital block letters and numbers, 6 inches high, 3 inches wide, and 3/4-inch width of line. Markings on concrete walls shall be horizontal with the bottom of the marking not lower than 2 feet below the top of the wall.

3.3 TABULATION OF LOCATION AND TEXT OF MARKINGS

3.3.1 Abbreviations

The following abbreviations shall be used where applicable. All other words shall be spelled out.

Description	Abbreviation
Bridge	BR
Side Drains	SD
Confluence	CONFL
Channel	CHAN
Avenue	AVE
Street	ST

3.3.2 Tabulation

Location of Marking Wall	Station*	Marking Painted On	Text of Marking
R	1074+28.51	CW	1074+29
R	1075+25.51	CW	1075+26
R	1076+33	CW	1076+33
R	1095+65	CW	1095+65
R	1095+88.59	CW	1095+89
R	1099+15.63	CW	1099+16
R	1106+04.6	CW	1106+05
R	1113+84.19	CW	1113+84
R	1114+20	CW	1114+20
R	1114+62.86	CW	1114+63
R	1116+04.25	CW	1116+04
R	1124+54	CW	1124+54
R	1129+98.44	CW	1129+98
R	1134+32.65	CW	1134+33
R	1140+49.69	CW	1140+50
R	1146+03.19	CW	1146+03
R	1146+63	CW	1146+63
R	1148+48.1	CW	1148+48
R	1149+18.45	CW	1149+18
R	1151+03.4	CW	1151+03
R	1154+53	CW	1154+53
R	1157+46.9	CW	1157+47
R	1162+57.2	CW	1162+57
R	1166+79	CW	1166+79
R	1169+06	CW	1169+06
R	1172+04	CW	1172+04
R	1176+73.75	CW	1176+74
R	1177+70.54	CW	1177+71

R	1180+98.6	CW	1180+99
R	1181+32	CW	1181+32
R	1183+08	CW	1183+08
R	1187+06	CW	1187+06
R	1193+45	CW	1193+45
R	1199+98.16	CW	1199+98
R	1200+35.72	CW	1200+36
R	1200+70	CW	1200+70
		Weir Canyon Rd.	
L+R	1207+41.32	PIER	1207+41
R	1208+97.63	CW	1208+98

R = Right Bank (Looking Downstream).
L = Left Bank (Looking Downstream).
CW = Concrete Wall.
* The actual channel station to the nearest foot shall be used.

3.3.3 "As Constructed" - Corrections

The above tabulation is based on project drawings. When the "As Constructed" condition will deviate from the data contained in the above tabulation, the "As Constructed" condition shall be used for markings, with station numbers rounded off to the nearest foot.

-- End of Section --

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